

**REMARKS**

This paper is filed in response to the final office action mailed on January 6, 2005. Applicants respectfully submit that this amendment is in full compliance with Rule 116 because it raises no new issues, reduces the total number of pending claims and clearly traverses all rejections based upon the prior art. Applicants respectfully submit that the narrowing amendment to claim 1 does not introduce any new issues which will require further searching or consideration. An early entry of this amendment is respectfully requested.

Claims 1 and 8 have been amended; claim 7 has been canceled; claims 1-4 and 8-22 remain pending.

Turning to the rejections based upon the prior art, claims 1-4 and 8-14 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 6,328,774 ("Shemo"). In response, claim 7 has been canceled and the limitations of claim 7 have been added to claim 1 but the possibility of X being iodine has been deleted and claim 1 has been narrowed from X being a halogen to X being only fluorine, chlorine or bromine. Applicants respectfully submit that this amendment traverses the anticipation rejection based upon Shemo for the following reasons.

Under MPEP § 2131,

[t]o anticipate a claim, the reference must teach every element of the claim. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

*Citing, Verdegaa Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

The Patent Office admits that Shemo only teaches an abrasive that includes periodic acid (or more accurately, "a periodate member"). See Shemo at column 6, lines 3-6. Column 6 teaches no other acid in combination with the abrasive. Shemo is directed only towards a periodate member as a polishing accelerator.

In contrast, claim 1 is limited to an additive that is a  $HXO_n$  compound where X can only be a fluorine, chlorine or bromine atom. Therefore, Shemo clearly does not teach or suggest every claim limitation of amended claim 1 and the anticipation rejection is improper and must be withdrawn.

Next, the office action rejects claims 15-16 and 19 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,060,783 ("Juengling") in view of Shemo.

However, claims 15, 16 and 19 all depend directly or indirectly from allowable claim 1. Juengling does not teach or suggest the family of additives to which claim 1 is limited. As noted above, neither does Shemo.

Therefore, no combination of Juengling and Shemo can serve as an obviousness rejection for any claim that depends from claim 1 because, under MPEP §§ 2142 and 2143,

[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.

*Citing, In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991); *see also* MPEP § 2143-§ 2143.03 for decisions pertinent to each of these criteria.

Simply put, no combination of Juengling and Shemo teaches or suggests all of the limitations of the claims and there is no teaching or suggestion in either Juengling or Shemo to expand the list of additives of Shemo beyond periodate and to include the novel use of the  $\text{HClO}_n$ ,  $\text{HFO}_n$  or  $\text{HBrO}_n$  recited in amended claim 1 for (1) a pH control agent to increase the polishing selectivity ratio of nitride and to decrease the polishing selectivity ratio of oxide as well as (2) an oxidant to increase the polishing speed of silicon.

The periodate member of Shemo acts as polishing accelerator only (col. 5, lines 65-67). In contrast, the  $\text{HClO}_n$ ,  $\text{HFO}_n$  and  $\text{HBrO}_n$  compounds of amended claim 1 act as pH control agents, polishing selectivity ratio manipulators and oxidants. Accordingly, there is no possible way for any obviousness rejection based upon Juengling and Shemo to establish a *prima facie* case of obviousness because the combination does not teach or suggest all the elements of claim 1 and therefore the obviousness rejections of claims 15-16 and 19 based upon Juengling and Shemo is improper and should be withdrawn.

Next, claims 17 and 21 are rejected under 35 U.S.C. § 103 as being unpatentable over Juengling, Shemo and further in view of U.S. Patent No. 5,877,052 ("Lin"). However, neither Juengling nor Lin teach or suggest the  $\text{HXO}_n$  compounds required by amended claim 1. Lin does not teach or suggest any slurry compositions. Shemo is limited only to periodate and therefore does not teach or suggest  $\text{HClO}_n$ ,  $\text{HFO}_n$  or  $\text{HBrO}_n$  recited by amended claim 1 for a pH control agent to increase the polishing selectivity ratio of nitride and to decrease the polishing ratio of oxide as well as an oxidant to increase the polishing speed of silicon. Therefore, no combination of these hypothetical references teaches or suggests every element of the slurry of amended claim 1 or the use of that slurry as recited in amended claim 15. Therefore, claims 17 and 21 which are dependent upon claim 15, which is dependent upon claim 1 are all allowable over any hypothetical combination of Juengling, Shemo and Lin and therefore the obviousness rejection of claims 17 and 21 is improper and should be withdrawn.

Next, the Patent Office rejects claim 18 under 35 U.S.C. § 103 as being unpatentable over Juengling, Shemo and further in view of U.S. Patent No. 5,994,232 ("Clampitt"). However, Clampitt is merely cited for the proposition that it teaches word line spacers. Clampitt does not teach or suggest the  $\text{HXO}_n$  family of compounds where X is Cl, F or Br as required by amended claim 1. Neither does Juengling nor Shemo. Therefore, no hypothetical combination of these three references teaches or suggests the slurry of claim 1, the method of using that slurry of claim 15 (which is limited to the slurry of claim 1) and therefore the obviousness rejection of dependent claim 18 based upon the hypothetical combination of these three references is improper and should be withdrawn.

Next, the office action rejects claim 20 under 35 U.S.C. § 103 as being unpatentable over Juengling, Shemo and further in view of U.S. Patent No. 6,033,962 ("Jeng"). However, Jeng is only cited for the proposition of the specific etching gases. Jeng does not teach or suggest  $\text{HXO}_n$  compounds for polishing slurries. Therefore, Jeng does not teach or suggest the family of pH adjusters and oxidants required by amended claim 1 and, as noted above, neither does Shemo or Juengling. Therefore, no hypothetical combination of these three references teaches or suggests the slurry of claim 1, the method of using the specific slurry of claim 1 as recited in claim 15 or dependent claim 20 which depends from claim 15. Therefore, the obviousness rejection of claim 20 based upon Juengling, Shemo and Jeng is improper and should be withdrawn.

Finally, claim 22 is rejected under 35 U.S.C. § 103 as being unpatentable over Juengling, Shemo and further in view of U.S. Patent No. 5,142,828 ("Curry"). However, Curry merely teaches the use of hard pads and does not teach or suggest the pH adjusters and oxidants required by amended claim 1 or the use of the slurry of claim 1 as recited by claim 15. Because claim 22 depends from allowable claim 15 and allowable claim 1, applicants respectfully submit that the rejection of claim 22 as being obvious in view of Juengling, Shemo and Curry is improper and should be withdrawn.

In short, Shemo is deficient as a base reference because it does not teach or suggest the family of additives,  $\text{HXO}_n$ , where X is chlorine, fluorine or bromine which serves (1) as a pH control agent to increase the polishing selectivity ratio of nitride and to decrease the polishing selectivity ratio of oxide and (2) as an oxidant to increase the polishing speed of silicon as explained on pages 4 and 5 of the present application. Instead, Shemo merely teaches the use of a periodate member as a polishing accelerator. Thus, Shemo is limited to compounds containing iodine and clearly does not teach or suggest the compounds and their benefits as provided by this disclosure. Therefore, Shemo cannot serve as an anticipating reference or an adequate base reference for amended claim 1. Because none of the other references are directed CMP slurries, none of the other references can be combined with Shemo to establish a *prima facie* case of obviousness for amended claim 1.

With all prior art rejections having been traversed, applicants respectfully submit that this application is in a condition for allowance and an early action so indicating is respectfully requested.

The Commissioner is authorized to charge any fee deficiency required by this paper, or credit any overpayment, to Deposit Account No. 13-2855.

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Respectfully submitted,

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